

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) An instrument mount apparatus for positioning a surgical instrument comprising a mount body having a base portion moveably coupled at a first articulating joint providing three degrees of freedom of movement and a side portion moveably coupled at a second articulating joint, and a single actuator operatively connected to said first and second articulating joints, said first and second articulating joints being freely moveable when said single actuator is in an unlocked position, wherein said first and second articulating joints are compressed each into a substantially immovable condition when said single actuator is placed in a locked position, and wherein said first articulating joint is at an angle relative to said second articulating joint, said base portion further including a clamping mechanism configured to clamp said base to a relatively fixed object.

2. (Original) The instrument mount apparatus of claim 1 wherein said angle is less than about 120 degrees.

Claims 3 - 4. (Canceled)

5. (Previously Presented) The instrument mount apparatus of claim 1, wherein said single actuator comprises a base post assembled thorough said base portion and said mount body and interconnected at a first end to a cam operatively interfacing a contact surface on said mount body, and a tie pin having a slotted portion which receives said base post, wherein, upon operation of said cam, said base post is drawn toward said cam and said locked position and a ramped portion of said base post drives said tie pin towards said locked position.

6. (Original) The instrument mount apparatus of claim 5, wherein said first articulating joint comprises a ball and socket joint and said base post further comprises a flange at a second end opposite said first end, wherein movement of said cam to said locked position draws said flange against said base portion thereby locking said ball and socket joint.

7. (Original) The instrument mount apparatus of claim 5, wherein said second articulating joint comprises a rotational joint including a frustoconical member extending from said side portion and a

cooperating frustoconical cavity within said mount body.

8. (Original) The instrument mount apparatus of claim 7, further including a grip member, said side portion and said grip member positioned to form an opening therebetween for receiving a surgical instrument.

9. (Original) The instrument mount apparatus of claim 8, wherein said tie pin is connected, at a first end, to said grip member.

10. (Original) The instrument mount apparatus of claim 9, wherein said tie pin comprises a pair of flexible prongs which interconnect at said first end with said grip member.

Claim 11. (Canceled)

12. (Original) The instrument mount apparatus of claim 9, wherein said tie pin is releasably connected to a release button at a second end of said tie pin, wherein pressing of said release button extends said tie pin and grip member to allow removal of said grip member to exchange surgical instruments.

13. (Original) The instrument mount apparatus of claim 1, wherein said first articulating joint comprises a ball and socket joint.

Claim 14. (Canceled)

15. (Original) The instrument mount apparatus of claim 1, wherein said second articulating joint comprises a ball and socket joint.

16. (Original) The instrument mount apparatus of claim 1, wherein said second articulating joint comprises a rotational joint.

Claims 17-83. (Canceled)

84. (Currently Amended) A system for use in operating on a heart through an incision in a patient, said system comprising:

a retractor including a drive mechanism and first and second retractor blades adapted to engage opposite sides of the incision, at least one of said first and second retractor blades being drivable by said drive mechanism, relative to the other of said first and second retractor blades, to spread apart an opening formed by the incision; and

an instrument mount assembly having a clamping mechanism mountable to a portion of at least one of said first and second retractor blades, adapted to receive a surgical instrument, and adapted to assume at least one locked configuration fixing said surgical instrument in an orientation with respect to said instrument mount assembly and fixing said instrument mount assembly with respect to said retractor, and at least one unlocked configuration permitting repositioning of said surgical instrument with respect to said instrument mount assembly, said instrument mount assembly comprising a single actuator actuatable to lock and unlock two joints included in said instrument mount assembly, one of said joints movably coupling a main body and providing three degrees of freedom of movement of said instrument mount assembly relative to a lower member of said instrument mount assembly that is fixable to a portion of at least one of said first and second retractor blades, and a second of said joints allowing movement between said surgical instrument and said main body when in said unlocked configuration.

85. (Previously Presented) The system of claim 84, wherein said surgical instrument comprises a stabilizer, said system further comprising said stabilizer mounted to said retractor via said instrument mount assembly.

86. (Previously Presented) The system of claim 84, wherein said instrument mount assembly is further adapted to assume an additional locked configuration fixing said instrument mount assembly to said retractor while allowing positioning of said surgical instrument with respect to said instrument mount assembly.

87. (Previously Presented) The system of claim 84, wherein said instrument mount assembly is further adapted to assume an additional unlocked configuration in which less than all degrees of freedom provided by said instrument mount assembly remain free to move.

88. (Previously Presented) The system of claim 84, wherein said instrument mount assembly is adapted to assume a partially-locked configuration, wherein said surgical instrument may still be moved with respect to said retractor under frictional resistance.

89. (Previously Presented) The system of claim 84, wherein said instrument mount assembly comprises a quick-release mechanism for releasing and interchanging surgical instruments held by said instrument mount assembly.

90. (Previously Presented) The system of claim 89, wherein said quick-release mechanism comprises a tie-pin connected to a grip member having a release mechanism, said release mechanism being releasably connected to said tie-pin, wherein actuation of said release mechanism releases said tie pin from said grip member.

91. (Previously Presented) The system of claim 90, wherein said release mechanism comprises a release button, and actuation of said release mechanism comprises pressing said release button.

92. (Previously Presented) The system of claim 84, wherein at least one of said at least one unlocked configurations permits repositioning of said instrument mount assembly on said retractor.

93. (Previously Presented) The system of claim 92, wherein, when in said unlocked configuration permitting repositioning of said instrument mount assembly on said retractor, said instrument mount assembly is slidably repositionable along at least one of said retractor blades.

94. (Previously Presented) The system of claim 93, wherein said first and second retractor blades are each provided with a rail along which said instrument mount assembly may be slid when in said unlocked configuration permitting repositioning of said instrument mount assembly on said retractor.

95. (Previously Presented) The system of claim 84, wherein at least one of said first and second retractor blades comprises at least one open slot for receiving and securing a suture therein.

96. (Previously Presented) The system of claim 93, wherein said at least one of said first and

second retractor blades along which said instrument mount assembly may be slidably repositioned comprises at least one open slot for receiving and securing a suture therein, and wherein said instrument mount assembly may be slidably passed over said at least one open slot during said repositioning even when said at least one slot secures a suture therein.

97. (Previously Presented) The system of claim 84, wherein said instrument mount assembly, when in said unlocked configuration permitting repositioning of said surgical instrument with respect to said instrument mount assembly, allows repositioning said surgical instrument about three degrees of freedom.

98. (Previously Presented) The system of claim 97, wherein said instrument mount assembly, when in said unlocked configuration permitting repositioning of said surgical instrument with respect to said instrument mount assembly, allows translation of said surgical instrument with respect to said instrument mount assembly.

99. (Previously Presented) The system of claim 84, wherein, when in one of said unlocked configurations, said instrument mount assembly is fixed with respect to said retractor, while permitting repositioning of said surgical instrument about multiple degrees of freedom with respect to said instrument mount assembly.

100. (Previously Presented) The system of claim 99, wherein, when in one of said unlocked configurations, said instrument mount assembly is fixed with respect to said retractor, while permitting translation of said surgical instrument with respect to said instrument mount assembly.

101. (Currently Amended) An instrument mount apparatus for positioning a surgical instrument, said apparatus comprising:

a grip member configured to lock to and release from a stable support;

a first joint member configured to allow three degrees of movement, in an unlocked configuration, of an a upper portion of said grip member relative to a lower portion of said grip member, said lower portion being configured to lock and release from said stable support

at least one second joint member external of and spaced from said first joint member, said second joint member for movably connecting the surgical instrument to the grip member; and

a locking mechanism, wherein said locking mechanism is actuatable via a single actuator, to both lock said first joint member and lock an orientation of the surgical instrument with respect to said grip member.

102. (Previously Presented) The apparatus of claim 101, wherein the stable support is a retractor.

103. (Previously Presented) The apparatus of claim 101, wherein said grip member is adapted to attach to the stable support and remain slidable with respect thereto, prior to locking said grip member.

104. (Previously Presented) The apparatus of claim 101, wherein said at least one joint member comprises a ball joint.

105. (Previously Presented) The apparatus of claim 101, wherein said at least one joint member comprises a rotational joint.

106. (Previously Presented) The apparatus of claim 101, wherein the surgical instrument comprises a stabilizer, said apparatus further comprising said stabilizer linked to said at least one joint member.

107. (Previously Presented) The apparatus of claim 106, wherein said stabilizer comprises a plurality of interconnecting links, one end link of said plurality of interconnecting links articulating with at least one of said at least one joint members, and another end link of said plurality of links articulating with a stabilizer foot adapted to engage the surface of the heart.

108. (Previously Presented) The apparatus of claim 107, further comprising a cable passing through said interconnecting links and connected with said locking mechanism, wherein said actuation of said locking mechanism applies tension to said cable, locking said interconnecting links in a fixed orientation.

Claims 109-112. (Canceled)

113. (Previously Presented) The instrument mount apparatus of claim 1, wherein said clamping mechanism comprises a pair of rail grips.

114. (Previously Presented) The instrument mount apparatus of claim 1, wherein the relatively fixed object is a sternal retractor.

115. (Previously Presented) An instrument mount apparatus for positioning a surgical instrument comprising a mount body having a base portion moveably coupled at a first articulating joint providing three degrees of freedom of movement and a side portion moveably coupled at a second articulating joint, and a single actuator operatively connected to said first and second articulating joints, said first and second articulating joints being freely moveable when said single actuator is in an unlocked position, wherein said first and second articulating joints are compressed each into a substantially immovable condition when said single actuator is placed in a locked position, and wherein said first articulating joint is at an angle relative to said second articulating joint;

wherein said single actuator comprises a base post assembled thorough said base portion and said mount body and interconnected at a first end to a cam operatively interfacing a contact surface on said mount body, and a tie pin having a slotted portion which receives said base post, wherein, upon operation of said cam, said base post is drawn toward said cam and said locked position and a ramped portion of said base post drives said tie pin towards said locked position; and

wherein said first articulating joint comprises a ball and socket joint and said base post further comprises a flange at a second end opposite said first end, wherein movement of said cam to said locked position draws said flange against said base portion thereby locking said ball and socket joint.

116. (Previously Presented) The instrument mount apparatus of claim 115, wherein said second articulating joint comprises a rotational joint including a frustoconical member extending from said side portion and a cooperating frustoconical cavity within said mount body.

117. (Previously Presented) The instrument mount apparatus of claim 116, further including a grip member, said side portion and said grip member positioned to form an opening therebetween for receiving a surgical instrument.

118. (Previously Presented) The instrument mount apparatus of claim 117, wherein said tie pin

is connected, at a first end, to said grip member.

119. (Previously Presented) The instrument mount apparatus of claim 118, wherein said tie pin comprises a pair of flexible prongs which interconnect at said first end with said grip member.

120. (Previously Presented) The instrument mount apparatus of claim 118, wherein said tie pin is releasably connected to a release button at a second end of said tie pin, wherein pressing of said release button extends said tie pin and grip member to allow removal of said grip member to exchange surgical instruments.